way, certainly, she is most likely to be captured. But it must not be forgotten that the results of the labours of many sages during many centuries will continue to be of no value to mankind in general so long as evolution is merely regarded as a principle by which to interpret the past. We must have a bridge to unite the domain of science with the domain of human action, and such a bridge forms an essential part of the structure of eugenics. Both national societies and international cooperation are needed for the purpose of spreading the light, and the efforts already made in these directions will, it is hoped, be furthered by the holding of this congress.

We may thus conclude that though for the moment the most crying need as regards heredity is for more knowledge, yet we must look forward to a time when the difficulties to be encountered will be moral rather than intellectual; and against moral reform the demons of ignorance, prejudice, and fear are certain to raise their heads. But the end we have in view, an improvement in the racial qualities of future generations, is noble enough to give us courage for the fight. Our first effort must be to establish such a moral code as will ensure that the welfare of the unborn shall be held in view in connection with all questions concerning both the marriage of the individual and the organisation of the State. As an agency making for progress, conscious selection must replace the blind forces of natural selection; and men must utilise all the knowledge acquired by studying the process of evolution in the past in order to promote moral and physical progress in the future. The nation which first takes this great work thoroughly in hand will surely not only win in all matters of international competition, but will be given a place of honour in the history of the world. And the more nations there are who set out on this path, the more chance there is that some of them will run this course to the end. The struggle may be long and the disappointments may be many. But we have seen how the long fight against ignorance ended with the triumphant acceptance of the principle of evolution in the nineteenth century. Eugenics is but the practical application of that principle, and may we not hope that the twentieth century will, in like manner, be known in future as the century when the eugenic ideal was accepted as part of the creed of civilisation? It is with the object of ensuring the realisation of this hope that this congress is assembled here to-day.

NOTES.

A ROYAL Commission has been appointed to report on the means of supply and storage of liquid fuel in peace and war and its applications to warship engines, whether indirectly or by internal combustion. The following are to be the members of the Commission:—Lord Fisher of Kilverstone, O.M. (chairman), the Right Hon. George Lambert, M.P., Sir Boverton Redwood, Bart., Sir Philip Watts, K.C.B., F.R.S., Sir H. J. Oram, K.C.B., F.R.S., Sir J. R. Jellicoe, K.C.B., Sir W. Matthews, K.C.M.G., Sir T. H. Holland, K.C.I.E., F.R.S., Sir T. E. Thorpe, C.B., F.R.S., Mr. A. Gracie, Mr. H. O. Jones, and Mr. A. F. Yarrow. The joint secretaries will be Captain P. W. Dumas, R.N., Engineer-Lieutenant C. J. Hawkes, R.N., and Mr. J. H. Narbeth.

MR. E. H. TENNYSON D'EYNCOURT has been appointed Director of Naval Construction to the Admiralty, and Mr. W. H. Whiting Superintendent of Construction Accounts and Contract Work, in succession respectively to Sir Philip Watts, K.C.B., F.R.S., and Sir W. E. Smith, C.B., who are retiring. Mr. W. J. Berry becomes Assistant Director of Naval Construction. Sir Philip Watts is to be retained as Adviser on Naval Construction.

COMMANDER EVANS, R.N., second in command, under Captain Scott, of the British Antarctic Expedition, is expecting to leave England at the end of August for New Zealand, where he will resume command of the *Terra Nova,* which will proceed to the south polar regions to meet Captain Scott and his party.

A REUTER message has been received stating that Captain Mikkelsen and Mr. Iversen, who in the summer of 1909 set out to discover the depôt of Mr. M. Erichsen and his two companions, who perished in the expedition of 1907–8, have arrived at Aalesund, and will proceed shortly to Copenhagen. The two explorers, who had not been heard of since they left the expedition on April 10, 1910, on the 76th parallel north latitude, proceeded over the inland ice to Denmark Firth, where they found a record left by Erichsen. On May 29, 1910, they began the return journey. They were subjected to terrible hardships. The dogs died one after the other, and they were obliged to shoot the few remaining animals for food. On November 29, 1910, Shannon Island was reached, where they hoped to meet Norwegian whaling boats in the summer of 1911, but the hope was vain. Having waited through the summer until it was so late in the year that no whaling boats could be expected, they left Shannon Island and went to Shamrock Island, where they wintered. Here the Norwegian fishing vessel *Sjöblomsten* found them, after they had abandoned all hope, and brought them to Aalesund. According to a statement made by Captain Mikkelsen, two reports from the late Mylius Erichsen were found in Denmark Firth. The first, dated September 12, stated that he was returning along the coast with provisions for sixteen days, while the second report, found in a summer camp, spoke of his discoveries, among which was one that the Peary Channel did not run through from sea to sea behind Hazen and Heilprin Lands, and that Navy Cliff was connected with Heilprinland. Erichsen's diaries were also recovered from Skærgaardsfjord.

THE report of the Court of Inquiry, presided over by Lord Mersey, on the loss of the *Titanic* was presented at a final sitting of the Court on Tuesday last. The finding is as follows:—The Court, having carefully inquired into the circumstances of the above-mentioned shipping casualty, finds, for the reasons appearing in the annex hereto, that the loss of the said ship was due to collision with an iceberg, brought about by the excessive speed at which the ship was being navigated. This finding, and the report itself, are concurred in by the five assessors:—Rear-Admiral the Hon. S. A. Gough-Calthorpe, Captain A. W. Clarke, Commander F. C. A. Lyon, Prof. J. H. Biles, and Mr. E. C. Chaston.

IT has been decided to place a bust of Lord Lister in the Royal College of Surgeons, and Sir Thomas Brock, R.A., is to be asked to undertake the execution of the work.

A MEMORIAL window to the late Hon. C. S. Rolls and Mr. C. S. Grace was dedicated on Friday last at All Saints', Eastchurch, Sheppey, by the Archbishop of Canterbury. The design is of two whole-length female figures with the respective legends, "Having done all to stand" and "Turn ye to the stronghold ye prisoners of hope." The inscription reads:—"To the Glory of God and in memory of Charles Stewart Rolls and Cecil Stanley Grace, Aviators, July, December, 1910. This window is given by friends, A.D. 1912."

PROF. HEINRICH RUBENS, professor of physics in the University of Berlin, has been elected president of the German Physical Society.

THE Moxon gold medal of the Royal College of Physicians (awarded every third year to the person deemed to have most distinguished himself by observation and research in clinical medicine) has been awarded to Sir David Ferrier, F.R.S., and the Murchison memorial scholarship, founded in memory of Dr. Charles Murchison, has been awarded to Dr. W. Rees Thomas.

BY the will of the late Sir James Inglis, a former president, the Institution of Civil Engineers has received the sum of 5000*l.* towards the cost of its new building now in course of erection.

THE inaugural address to the Summer School of Town Planning, which is to be held at Hampstead, is to be delivered on Saturday next by the Marquis of Crewe. The school is being held under the auspices of the London University Extension Board, and the course will extend from August 3 to 17. The lectures and demonstrations are intended to be of special value to municipal engineers, architects, and surveyors, but most of the lectures will be of interest to others who are concerned with town planning from the more general aspect of civic and economic progress.

THE sixth Pan-American Congress, in connection with the Latin-American Medical Congress and the Congress of Hygiene, is to take place at Lima from August 3 to 10. There are to be eight sections devoted respectively to anatomy and physiology; bacteriology and parasitology; medicine; surgery; hygiene; physics, chemistry, natural history, pharmacology; veterinary medicine; odontology.

THE sixth International Congress of Radiology is to be held at Prague from October 3 to 8 next, under the presidency of Prof. Julius Stoklasa, rector of the Technical High School of Prague. The Radium Institute at Vienna and the laboratories of Joachimsthal will be visited, and an exhibition is being arranged.

WE learn from *The Chemist and Druggist* that a movement is on foot for the establishment, in Bangkok, of a Pasteur Institute. It is intended that at the institute not only shall rabies be dealt with, but that attention shall be paid to bacteriology, and opportunities afforded for the study of all kinds of disease. The Minister of the Interior is to provide the building, and the salaries of the staff are to be paid by the Government.

STEPS have been taken to form sections of ophthalmology and tropical medicine in connection with the Royal Society of Medicine, and it is hoped that both sections will be in active operation by the beginning of the next session.

LOWTHER LODGE and grounds of two acres, facing Hyde Park, and having frontages to Prince's Gate and Kensington Gore, have been purchased by the Royal Geographical Society as its headquarters. According to *The Times,* the reception-rooms on the ground floor will provide accommodation for a museum, a map-room, a council-room, a reading-room, and a secretary's office. On the first floor, overlooking the gardens, are some fine rooms suitable for a library, while close to them are others which will be used as reading-, writing-, smoking-, and tea-rooms. Above these are rooms affording ample accommodation for the society's school of instruction, the map draughtsmen, and other officials of the society. The house has a good basement and extensive attics, which will provide storage for books or maps sufficient to meet requirements for many years. As the society wishes to take possession of its new premises without incurring any financial liabilities, an appeal is about to be made to the fellows to subscribe towards the cost. The society will probably enter into occupation in the beginning of next year.

A COLLECTION of 117 Hawaiian birds has been presented to the University of California by Miss A. M. Alexander, for inclusion in the California Museum of Vertebrate Zoology. According to *Science,* the collection is of especial importance seeing that, in consequence of the clearing of forest lands for cultivation in the Hawaiian Islands, some of the species represented in Miss Alexander's gift have become extinct.

THE first report of the Explosions in Mines Committee [Cd. 6307] appointed by the Home Secretary to inquire into the causes and means of prevention of coal-dust explosions in mines, although only of a preliminary character, clearly indicates that the Committee. which consists of Sir Henry Cunynghame, Mr. R. A. S. Redmayne, Captain A. H. P. Desborough, Prof. H. B. Dixon, and Mr. W. C. Blackett, intends thoroughly to test the capabilities of inert dusts to act as a substitute for water, either in those cases in which water is considered to be inapplicable or as an alternative in all cases. It gives a short account of the recent history of the coal-dust question; describes, with plans and photographic illustrations, the new experimental station at Eskmeals, in Cumberland; refers to the proposed use of stone dust as a means of preventing explosions; and concludes with an account of observations on the effect of dusts upon health. The last-named subject was specially inquired into on behalf of the Committee by Dr. Beattie, professor of pathology at the University of Sheffield. The results of Dr. Beattie's experiments on guinea-pigs, which are given in an appendix, are found to corroborate Dr. Haldane's view that dusts containing no free silica are not markedly harmful, "but that dust containing uncombined silica or other hard material was exceedingly dangerous."

THIS season's excavations at Carchemish, which have been carried out by Messrs. C. L. Woolley and T. E. Laurence under Mr. Hogarth's direction, have resulted in some important additions to our knowledge of Hittite art and culture. Riverside quays have been discovered below the Citadel mound, decorated with reliefs in the style of the Cappadocian monuments, and a further series of interesting reliefs have been found along the southern wall of the great courtyard in front of the Lower Palace. On one of these the camel makes its first appearance in Hittite art, and another shows a strange deity having the body of a scorpion, eagle's wings, and bull's feet, who is associated with the Hittite Thunder god. The most interesting of the smaller finds was a part of a large clay cylinder inscribed with Hittite hieroglyphs, and it suggests the possibility of finding further native records, other than monumental inscriptions, on the site. Materials for a valuable pottery-sequence have also been obtained both at Carchemish itself and from a cemetery at Amarna, about eight miles to the south of Jerablus.

EXAMPLES of the transition between the use of stone or bone implements and those of metal are always interesting. In *The Cairo Scientific Journal* for June Mr. O. Bates describes two cases of this kind. In one the narrow chisel-shaped celts so often found in Neolithic kitchen-middens and camp sites are compared with a tool made of the horn of the *Gazella rufifrons*, which is rubbed down to a flat edge and used at the present day in the Sudan for slivering bark from trees for the purpose of making cordage. The second is an implement used in the same region for cutting coarse thatching grass. It consists of a haft of mimosa wood into which is socketed a celtiform blade of iron, which is fixed at an angle of about 20 degrees to that of the hafting, so that when the tool is grasped by a worker who bends from the hips, the iron is parallel with the ground. This tool preserves a characteristic form, which must have preceded the introduction of the curved reaping-hook, and illustrates a method of hafting probably used with some of the flat, broad-edged stone celts of Neolithic times.

THE curators of the Smithsonian Museum announce that four expeditions are now in the field collecting exhibits for the Panama-Californian Exhibition, to be held at San Diego, California, in 1915. Dr. Hrdlicka has started for the Upper Yenesei region of Siberia, whence he will visit Kiachta, in Chinese Turkestan, Mongolia, and then follow the road to Urga, and thus proceed along the old caravan route to China proper. On his return he will resume his studies of the distribution of the physical types of man in Peru. Dr. R. D. Moore and Mr. J. B. Harrington will undertake the survey of the Eskimo of St. Lawrence Island, Alaska. The fourth tour is in charge of Dr. P. Newton, who will investigate the Negritos of the Philippine Islands. The Smithsonian exhibits at the approaching exhibition thus promise to be of unusual interest and scientific value.

DR. DAVID HERON'S "Second Study of Extreme Alcoholism in Adults" (Eugenics Laboratory Memoirs xvii.; London: Dulau and Co., Ltd., 1912, pp. 95) is based on data collected by Dr. R. Welsh Branthwaite, the inspector under the Inebriates Act, and published in his report for 1909. He gives an account of 166 male and 865 female inebriates, who were admitted to reformatories between January 1, 1907, and December 31, 1909. As the number of men is insufficient for satisfactory statistical treatment, Dr. Heron has in the present memoir confined his attention to women. One of the most striking facts brought out is the close association between alcoholism as judged by committal to a reformatory and mental defect—two-thirds of the 865 women are mentally defective—and thus the problem arises, to what is this association due? The two possible causes which first suggest themselves are either that feeble-mindedness leads to drink or that drink leads to feeble-mindedness, and Dr. Heron points out that the evidence is in favour of the former of these two alternatives. A third possibility is that mental defect as much as inebriacy leads to confinement in a reformatory. If this were the case association without any necessary causal connection between mental defect and inebriacy would be found among the inmates of the reformatories. As repeated conflicts with the police are necessary to make one eligible for admission, and as such conflicts are not improbably due partly to mental defect, the third possibility suggested should receive serious attention. In conclusion, it must be pointed out that the three alternatives are not mutually exclusive.

IN an article on hybrids between Indian humped cattle and European cattle in the July number of *The American Naturalist*, Dr. R. K. Nabours shows that while the colour-pattern of Herefords and Durham shorthorns is dominant in the hybrids of the "F1" generation, traces of the zebu hump and dewlap persist in the mixed progeny. It is further evident that in the "F2" generation pure humped and pure shorthorn strains are segregated, and that when the parents are pure-bred the segregation follows the law of alternative inheritance. Humped cattle are immune to the Texas tick—the carrier of Texas fever—and there are indications that the same immunity holds good for at least the earlier generations of the hybrids.

IN *The Zoologist* for July the Rev. H. Friend suggests that certain noxious white worms of the enchytrœid group, as well as some of the tubificids, which do so much harm to garden crops—celery, for instance—are annuals, and also that as the various species are short-lived, one continues the work commenced by another. In autumn, for instance, when vegetable decay sets in, the annelids on the spot commence breaking up the waste, but after egg-laying they cease to work, when the task is probably taken up by a second, and afterwards by a third and fourth, species. The matter is clearly one demanding prompt and careful investigation.

New Japanese fishes of the Cyclogaster group form the subject of No. 1907 of the Proceedings of the U.S. National Museum, in which Messrs. Gilbert and Burko describe no fewer than twenty-three species. The family is affirmed to be of boreal origin, but ranges along the coasts and in shallow water so far south as the cold northern currents can be traced.

In the July number of *The Nature Photographer* the editor bears testimony to the readiness with which the majority of owners accede to requests for permission to photograph birds on their estates, frequently also offering the invaluable services of their gamekeepers. A nest of newly hatched partridges is one of the most striking pictures in this issue.

Mr. J. Ramsbottom, of the Department of Botany, Natural History Museum, has published (Transactions of the British Mycological Society, 1911, reprint) a useful and interesting critical summary of works published during 1911 on the cytology of reproduction in fungi. It is greatly to be desired that specialists in other branches of botanical work should undertake the preparation of collective reviews of this kind, summarising the publications of each year, and thus recording the progress made in the various departments of the science. As the author points out, the question of sexuality in fungi is of peculiar interest, for many points arise such as have not to be considered in the other groups of plants, and there is a greater range of sexual differences in fungi than in the whole of the other members of the vegetable kingdom. In the case of each memoir which is summarised and commented upon, the author gives a brief account of previous work leading up to that under consideration, and a useful bibliography is given at the end of the paper.

The second part of the "Flora Koreana," by T. Nakai, occupies vol. xxxi. of the Journal of the College of Science, Tokyo. Numerous new species of vascular plants are described and figured, the memoir being accompanied by twenty fine plates. Throughout the work, keys are given to the genera in each family, and to the species in each genus, with references to the synonymy and geographical distribution of each species. The greater part of the material dealt with in this extensive flora has been collected by Japanese botanists, and it is to be hoped that they will not remain content with a floristic treatment of the Korean flora, but will proceed to the ecological study of this interesting region.

A note bearing on the much-debated question of the age of the earth is given in the Proceedings of the Tokyo Mathematico-physical Society by S. Suzuki. The calculation refers to the time taken for the present crust of the earth to solidify. A result is obtained on the supposition that the heat of fusion liberated by the solidification of the crust supplies the heat lost by radiation, and it is further assumed that the effect of the curvature of the earth's surface may be neglected. According to these hypotheses the calculated time varies between 30 and 300 million years, according to the kind of rock (gneiss, basalt, or granite) assumed in the calculations. The difficulty is, of course, our imperfect knowledge of the experimental data on which the conclusions are based.

While the stability of the aëroplane has been successfully made the subject of mathematical investigation, some doubt still exists as to the extent to which the conclusions affect the behaviour of actual flying machines. The fact that several papers have recently appeared, treating the problem by practically the same methods, seems to indicate that the subject is beginning to receive more attention than it has hitherto received. In the *Bulletin de la Classe des Sciences* (Brussels), 1912, No. 4, Dr. Julien Pacotte gives an investigation based on forming the determinantal biquadratic for the longitudinal and lateral oscillations, but he does not discuss the particular cases which arise, except the want of lateral stability of a system without fins. The same methods were applied in a recent paper by Dr. H. Reissner, of Aachen, who, by the way, gave the first investigation of lateral *steering*. A series of papers on aëroplane stability (in Spanish) is now appearing in the current numbers of the *Revista de la Sociedad matematica española,* commencing with the March number.

In the Bulletin of the Imperial Society of Naturalists of Moscow for the year 1911, pp. 93 to 158, Dr. E. Leyst compares the diurnal inequalities of barometric pressure in years of sun-spot maximum and minimum at Pavlovsk, Batavia, Irkutsk, Potsdam, and Greenwich. At Pavlovsk and Batavia he uses data from nine years of many and nine years of few sun-spots between 1877 and 1906. For the other stations fewer years' data are employed. A difference appears between the diurnal inequalities for both summer and winter in years of many and few sun-spots, which Dr. Leyst considers sufficiently definite to be accepted as a physical fact. Fourier harmonic analysis indicates that the difference at Pavlovsk between years of many and few sun-spots is mainly in the twenty-four-hour term. The summer data for Greenwich differ markedly in their indications from those at Pavlovsk and Potsdam, but Dr. Leyst is disposed to ascribe this to exceptional conditions at Greenwich, possibly its maritime position. If one takes the diurnal inequalities given for the individual months of the year at Pavlovsk, one finds that in five months of the twelve the range was greater in the sun-spot minimum years, though both summer and winter half-years show the maximum range in years of sun-spot maximum. In December, as Dr. Leyst himself remarks, the excess of range in the sun-spot minimum years was exceedingly prominent. Considering the differences between January and December at Pavlovsk, and between summer at Potsdam and Greenwich, evidence seems desirable that the phenomena are really representative of normal average conditions.

In *Symons's Meteorological Magazine* for July Dr. Mill, in discussing "The Rainfall of June," directs attention to the regular publication of tables containing systematic information regarding the rainfall for the preceding month. The stations in question are so uniformly distributed that the mean of the values gives a fair approximation to the general rainfall over the British Isles. Out of fifty-five stations quoted all except two had falls exceeding the average, at eighteen more than twice the average fell, and at Cardiff the fall was nearly three times the average. Dealing with the percentage of the average generally, England and Wales had 186, Scotland 156, Ireland 193, and the British Isles as a whole 180 per cent. An interesting article on the weather of the same month, by Mr. F. J. Brodie, shows that with the exception of one short fine spell in the south-east the weather was of a continuously broken character, and that thunderstorms were unusually frequent. "The generally unsettled character of the weather was due to the almost constant extension over these islands of large cyclonic systems from the Atlantic." In many instances the centres of the disturbances passed directly across the United Kingdom.

THE researches on fluorescence and phosphorescence which have been carried out at Cornell University during the last ten years by Profs. Nichols and Merritt and their pupils are summarised in a memoir entitled "Studies in Luminescence," which forms publication 152 of the Carnegie Institution. With the help of the spectrophotometer the distribution of intensities throughout the emission bands and the variation of the absorption with wave-length have been determined under as wide a range of conditions as possible, in order to provide a test of the validity of each of the theories of fluorescence and phosphorescence which have been proposed. After a careful examination of the experimental facts thus accumulated, the authors arrive at the conclusion that the theory most in keeping with them is the one first advanced by Prof. Wiedemann in 1889, and modified and extended by Wiedemann and Schmidt six years later. According to this theory some chemical or physical change (probably dissociation) takes place in a luminescent body during excitation, and the return of the substance to its normal condition, which may last for some time or be over in an instant, is accompanied by emission of light.

IN the June number of the Transactions of the Chemical Society Dr. T. M. Lowry describes some interesting observations on the production of nitrogen peroxide on passing air through an ozoniser and electrical spark-gaps, either in parallel or in series, in accordance with the process devised in 1903 by Leetham for the production of a bleaching gas suitable for the treatment of flour. It is shown that, whereas in air which has been subjected either to the action of the ozoniser alone, or to the spark-gaps only, no trace of nitrogen peroxide can be detected by means of the absorption spectrum, in the Leetham gas, which has been submitted to both forms of discharge, the concentration of the peroxide is as high as 1/4000. Not only is this concentration attained by passing ozonised air through the spark-gaps, but, contrary to what had been anticipated, the same result is obtained by passing the air through the spark-gaps first and then through the ozoniser. This novel function of the ozoniser is the more remarkable because ready-made nitrogen peroxide is completely bleached on passing it through the machine, probably owing to oxidation to nitric anhydride, N_2O_5. A similar concentration of the peroxide is also obtained on passing the two air currents in parallel and subsequently mixing the gases. The conclusion is drawn that the sparking of air gives rise to "atomised" nitrogen ($N_2 \rightarrow 2N$) which is capable of combining directly with ozone. It is, however, to be noted that this "atomised" nitrogen behaves somewhat differently from the "chemically active" variety of nitrogen obtained recently by Prof. Strutt under somewhat different conditions, which does not appear to combine with ozone to form oxides of nitrogen.

JOURNAL vii. of the British Fire Prevention Committee (published at 42*s.* net) contains the results of fifty-eight tests on the fire-resistance of doors and shutters. The results are presented in the form of four tabulated summaries, and included are illustrations from photographs of some of the tests. The reports state bare facts and occurrences, and are not to be read as expressions of opinion, criticisms, or comparisons. The information given is certain to be of great value to all engaged in the design or construction of buildings. Thus we extract the following particulars from the table of tests for "temporary protection." A solid-framed teak door, 1⅞ in. thick, 6 ft. high, and 2 ft. 5 in. wide, failed at twenty-four minutes by flame showing between the bottom edge of the door and the sill. After forty-nine minutes flame showed between the edge of the frame and the stile of the door above and below the lower bolt. After fifty-four minutes, smoke issued through joints of the panels and centre rail. After sixty minutes the flames burst through all joints, and the door collapsed five minutes afterwards. The maximum temperature was 1975° Fahr.

Engineering for July 19 contains an illustrated account of a new type of ship for the transport of submersible boats, designed by Messrs. Schneider and Co., Creusot. The hull of the *Kanguroo* has a central portion built in the shape of an ordinary type of floating dock, and carries the submersible boat. The aft part of the ship contains all the engines, boilers, the men's quarters, &c. The forward part contains a tunnel or covered canal, forming an extension of the dock portion, and is closed by a movable stem; this part also acts as a levelling caisson to put the ship on an even keel. A series of sluice-valves and drain pumps serve to vary at will the draught of the vessel when shipping or unshipping, the draught being so regulated as to allow the submersible to float through the tunnel. When the submersible is in the compartment amidships, it is shored up, the movable stem is replaced, and the water is pumped out of the dock, which then forms a dry dock of the usual type. The first submersible boat to be transported in the *Kanguroo* was the *Ferre,* built by

Messrs. Schneider for the Peruvian Government. The *Ferre* was shipped in the *Kanguroo* in Toulon Harbour on June 28 last, and is now on her way to Callao.

Mr. Henry Frowde will shortly publish as a permanent memorial of the recent celebration of the 250th anniversary of the Royal Society a volume of collotype facsimiles of the signatures of the founders, patrons, and fellows of the society recorded in its first journal-book and the charter-book from 1660 to the present time. The work will contain a preface by Sir Archibald Geikie, the president. The same publisher has just issued the third edition, revised and rearranged, of "The Record of the Royal Society of London."

OUR ASTRONOMICAL COLUMN.

Astronomical Occurrences for August:

August 2. 8h. 0m. Jupiter stationary.
7. 4h. 58m. Saturn in conjunction with the Moon (Saturn 6° 0′ S.).
10. 14h. 39m. Neptune in conjunction with the Moon (Neptune 5° 37′ S.).
13. 0h. 31m. Venus in conjunction with the Moon (Venus 2° 13′ S.).
,, 3h. 54m. Mercury in conjunction with the Moon (Mercury 8° 31′ S.).
14. 3h. 50m. Mars in conjunction with the Moon (Mars 1° 32′ S.).
20. 1h. 10m. Jupiter in conjunction with the Moon (Jupiter 4° 44′ N.).
21. 22h. 0m. Mercury in inferior conjunction with the Sun.
24. 9h. 50m. Uranus in conjunction with the Moon (Uranus 4° 26′ N.).
26. 23h. 0m. Saturn at quadrature to the Sun.
30. 0h. 0m. Jupiter at quadrature to the Sun.
,, 19h. 0m. Mercury stationary.

Observations of New Stars.—A paper, full of important observations and suggestions, is published by Prof. Barnard in No. 8, vol. lxxii., of the *Monthly Notices,* in which he discusses his observations of Nova Lacertæ, Nova Geminorum (No. 2) and some other stars.

After dealing with the position and brightness of Nova Lacertæ, he describes the focal peculiarities presented by the star, at different epochs, in the field of the 40-in. refractor. At first, January, 1911, there was a normal image at the normal stellar focus, but 9 mm. beyond that there was also a well-defined crimson image produced by the very strong hydrogen, Hα, radiation. This crimson image was short-lived, and had certainly disappeared by April 9, probably earlier. Then the focus of the nova became longer, finally corresponding to that of a nebula. The stage where there existed the abnormal crimson image was also observed in Nova Geminorum (No. 2) on March 22 of this year, the difference of focus between the normal and abnormal images being 9.3 mm. Prof. Barnard suggests that it should be possible to discover novæ during this stage by sweeping for them, as one does for comets, the criterion being the focal peculiarity produced by the excessive brightness of Hα. He also suggests that, with the 40-in. telescope, there are probably hundreds of past novæ which might now be recognised by their presenting the second condition of longer focus and ill-defined appearance; examples of this class are Nova Cygni (1876), Nova Aurigæ (1891), and Nova Sagittarii (1898).

Prof. Barnard also presents some results of focal measures of several stars of different types, in which the normal image presented no peculiarities, although in several cases, *e.g.* P Cygni, he found abnormal images at some distance from the ordinary focus. Discussing the theories concerning novæ, he inclines to the one in which the outburst of the star is supposed to be produced by physical forces inherent in a single body.

The Spectroscopic Determination of Aqueous Vapour in the Atmosphere.—The determination of the amount of water vapour existing in the earth's atmosphere between the observer and observed body is a matter which enters into several important astronomical problems, and therefore the paper by Mr. F. E. Fowle in No. 3, vol. xxxv., of *The Astrophysical Journal,* is of considerable importance astronomically. Mr. Fowle passed the radiations from a Nernst lamp through long columns of air, of which the quantity of aqueous-vapour content and the physical conditions were strictly recorded, and then, with a spectrobolometer, found the absorption produced by this aqueous vapour in the region of the two bands at $\lambda 1\cdot13\ \mu$ and $\lambda 1\cdot47 \mu$. In the laboratory experiments it was not feasible to work beyond an amount of aqueous vapour corresponding to a depth of 0·5 cm. of precipitable water, but by incorporating the results of bolographs secured for high and low sun at Mount Wilson the curves are carried well beyond any amount of aqueous vapour likely to be met with in practice. In subsequent papers Mr. Fowle proposes to give applications of his method.

Personal Errors in Transit Observations.—In his address, as retiring president, to the Royal Society of South Africa, Mr. S. S. Hough gave some most interesting particulars concerning the progressive elimination of personal error from the transit observations made at the Cape Observatory. After describing the eye-and-ear and the chronographic methods, Mr. Hough stated that the differences between two experienced observers not uncommonly amounted to 0·25s., a varying quantity fatal to the researches calling for great accuracy. Then the Repsold hand-driven travelling-wire apparatus was adapted, and when six observers used this regularly, in 1908–9, the personal discordances were very greatly reduced, so that the extreme discordance, for all the observers, was only 0·06s. On the Repsold method being used, in 1911, with the mechanically-driven web, this extreme discordance, for seven observers, was further reduced to less than 0·02s.

THE BRITISH MEDICAL ASSOCIATION

THE eightieth annual meeting of the British Medical Association was held in Liverpool on July 19 to 27. The first four days were devoted to the representative meeting, at which the representatives of the branches and divisions of the United Kingdom and the Colonies discussed various matters affecting the association, the most important being the question whether the association should make further representations to the Government in respect of the disfavour with which the Insurance Act is regarded by members of the association. After prolonged discussion, in the course of which the ill opinion of the Act entertained by the medical profession was freely expressed, it was decided by 181 votes to 21 to break off negotiations with the Government. In most cases the representatives had already been instructed as to their vote by meetings of the local divisions, at which resolutions directed against further conferences with the Government had been passed unanimously or by large majorities. It may here be observed that the medical